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SCHEDULE OF MEETINGS

6-13 January	**Standing Committee on Administration and Finance of the Executive Board, Geneva**
14 January (approximately 2-3 weeks)	**Twenty-first session of the Executive Board, Geneva**
24-28 February	**Expert Committee on Medical Rehabilitation, Geneva**
10-15 March	**Expert Committee on Sanitation of International Airports, Geneva**

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THE FILARIASES : A SCOURGE OF THE TROPICS

The filariases represent a public health problem of world-wide importance. Stoll estimates that about 300 million people living in the tropics and sub-tropics are afflicted with one of the diseases belonging to this group. The manifestations and effects of the various filariases are so diverse that a simultaneous attack on all of them is impossible. The World Health Organization has therefore decided to proceed gradually with a long-term programme for the control of this group of diseases.

Priority has been given to two filariases, which are major public health problems in many countries, and about the prevention and treatment of which much is already known. The first of these is bancroftian filariasis, which is prevalent in the tropical regions of Africa, Central and South America, Asia and Oceania. The parasite belongs to the genus *Wuchereria* and is transmitted by mosquitos. It invades the lymphatic system, blocks the vessels and causes massive firm swellings (elephantiasis) of the limbs and dependent parts. In 1955 a study group on bancroftian filariasis was convened by WHO at Kuala Lumpur (Malaya). Control of this disease by the use of residual insecticides against mosquito larvae and adults, and by mass chemotherapy, has already commenced in Brazil, Ceylon, Fiji, India, Malaya, Tahiti, Tanganyika and Thailand.

The second disease to which priority has been given is onchocerciasis, which is prevalent in tropical Africa and Central and South America. The vectors of the parasite, *Onchocerca volvulus*, are simuliid flies. When the infected fly bites, infective larvae enter through the wound and later cause nodules in various parts of the host's body. Nodules about the head are often associated with serious and progressive ocular lesions which may lead to blindness. Control measures include chemotherapy of patients and the addition of DDT emulsions to the flowing streams in which the fly larvae develop. The Expert Committee on Onchocerciasis, which met in Mexico City in 1953, published a report [1] indicating the best methods of epidemiological survey and control, and suggesting that special attention should be paid to the geographical distribution, proportion of ocular lesions in the various zones, and possible existence of animal reservoirs in Africa. During the African Conference on Onchocerciasis, held in 1954 at Leopoldville, Belgian Congo,[2] it was stated that the disease, which is prevalent among fishermen living near rivers in the Sudan, had been responsible for an exodus of the population from the rural fertile areas of Uganda and Chad. The Conference also noted that in certain places in Nigeria 77% of those afflicted with onchocerciasis have palpable nodules and 44% have ocular complications, but that ocular lesions were less frequent in people who had a balanced diet. It recommended that prophylactic measures should be continued and further research carried out on an international basis.

Some of the papers presented at the various meetings have been brought up-to-date and published in the *Bulletin of the World Health Organization*.[3] Much of the information on which the present article is based has been derived from this source.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1954, **87**
[2] *Chron. Wld Hlth Org.*, 1954, **8**, 347
[3] *Bull. Wld Hlth Org.*, 1957, **16**, 481-706

FILARIASIS CAUSED BY WUCHERERIA

(W. bancrofti, W. malayi)

Geographical distribution

Wuchereria filariasis is widespread in tropical and sub-tropical regions (from latitude 40° north to latitude 30° south) and, although unknown in Europe, is prevalent in the other four continents. During the Second World War a number of American servicemen stationed in the Pacific were infected, and

cases also occurred later in some French and North African soldiers in Viet Nam.

Predisposing causes

Infection may occur at any age; it is unusual, however, before the age of 20 and the maximum incidence is between 20 and 35 years of age. *Wuchereria* filariasis may be contracted in towns, when it is transmitted by *Culex fatigans*, or in the country where it may also be transmitted by anopheline mosquitos. *Malayi* filariasis is a rural disease transmitted by Mansonioides mosquitos. Both in mosquitos and in man infection takes place mainly during the rainy season, which may last for several months.

Epidemiology

The adult *W. bancrofti* lives in the lymph vessels and nodes of man and is a thin worm up to 10 cm in length.

The microfilariae, which measure 300μ long and 8μ wide, live in the blood, their numbers in the peripheral circulation showing a daily periodicity. In most parts of the world the largest numbers are present in the peripheral blood between 10 p.m. and 3 a.m., but during the day they disappear, remaining dormant in the pulmonary veins until evening. In parts of Oceania, however, the numbers remain constant or show only slight fluctuations.

The microfilariae are taken up by the female mosquito during its blood meal. They penetrate the wall of the stomach after a few hours and migrate into the thoracic muscles, where they develop into larvae. After two to three weeks the larvae move on to the proboscis, from which they penetrate the skin when the mosquito bites.

The larvae then pass to the lymph vessels, where they mature, mate, and give rise to a new generation of microfilariae. These embryos pass through the thoracic duct and enter the blood-stream. Man is thus the usual reservoir of infection, but in Malaya and in India the parasite has also been found in various animals.

W. bancrofti is carried by several mosquitos, which may differ in different parts of the world. Most frequent is *Culex fatigans* Wied, which is the important vector in Brazil, Ceylon, India, Malaya, the Philippines and Samoa. *C. pipiens* is an important vector in China, Egypt, the Cameroons and French West Africa, while the form *pallens* is found in China and Japan. These are all predominantly urban mosquitos. In Ceylon the larvae of *C. fatigans* develop in the highly polluted water of catch-pits, coconut-husk-pits, drains, gulleys and marshes (Chow, C.Y. & Thevasagayam, E.S.). The adult parasites, the majority of which are females, make their homes in houses, particularly in bedrooms, resting on furniture, clothing and mosquito nets, which usually escape spraying with insecticides.

In Polynesia, and especially in Tahiti, according to Kessel, *Aëdes polynesiensis* and *A. pseudoscutellaris* are vectors in addition to *C. fatigans* (*quinquefasciatus*). They live in the forests and only enter houses occasionally to feed, but do not remain there. Breeding places of the larvae are tree-holes, rock-holes, canoes, coconut shells and sea-shells. The eggs can survive long periods of drought in any of these containers. The dispersal range of the mosquito is not more than 100 metres. In Africa, and in particular in the Belgian Congo, Senegal and Tanganyika, *Anopheles gambiae* and *A. funestus* are the important vectors of *W. bancrofti*. In Australia, Brazil, China, the New Hebrides and New Zealand it is transmitted by other anophelines. In India, where the epidemiology has been studied by Raghavan, *W. bancrofti* is transmitted by *C. pipiens* or by anophelines, whereas the vectors of *W. malayi* are Mansonioides. The females lay their eggs on the under-surface of the leaves of aquatic plants. When the larvae hatch they attach themselves to the under-water stems of water plants from which they draw their oxygen. The pupae behave similarly, afterwards detaching themselves from the stems and rising to the surface just before the adults emerge.

M. annulifera are small brownish mosquitos, which are silent in flight and rest in

dark corners of houses, biting in the evening mainly between 7 p.m. and 9 p.m. *M. uniformis* is a black mosquito, which bites out-of-doors. Knowledge of the habits of the various vectors, both as larvae and as adults, is essential for their effective control.

Symptomatology

The symptoms do not appear until 3 to 18 months after infection. Adenopathy, which soon becomes generalized, is followed, at varying intervals, by attacks of acute lymphangitis, accompanied by fever and local pruritus of an allergic nature. It is only later, in patients who have suffered frequent attacks of lymphangitis, sometimes with secondary infection, that obstruction of the lymph vessels occurs, and in about 10% of these patients elephantiasis develops. The part of the body affected may increase to three or four times its normal size; the skin becomes rough and furrowed, taking on the typical "elephant's leg" appearance; the scrotum may become enormously enlarged, even reaching the ground in some cases.

Galliard states that doctors in Algiers and Constantine observed 150 cases of febrile lymphangitis, caused by *W. malayi*, among French and North African soldiers who had been serving in Viet Nam. All of them recovered on returning home, either spontaneously or after treatment with diethylcarbamazine. This confirms that serious and irreversible lesions, such as elephantiasis, develop only after long residence in an endemic area.

Treatment

Symptomatic treatment includes massage, elastic bandages, sclerosing injections and surgical excision, as well as the administration of acetylsalicylic acid, antihistamines, sulfonamides and antibiotics. In addition, certain specific filaricides derived from piperazine are now available for chemotherapy. However, although many of the female filariae are killed by these products, some may survive with the doses usually used, with the result that microfilariae may reappear a year after treatment in some cases, thus making fresh treatment necessary.

The use of diethylcarbamazine (Hetrazan, Notezine, Banocide) was introduced by Hewitt et al. in 1947.[4] It is a piperazine derivative administered by mouth in a daily dosage of 2 mg/kg, three 10-day courses of treatment being given at intervals of two to three weeks. In the French and North African soldiers infected in Viet Nam, who were given this dosage, Galliard found, 15 months after treatment, that the parasites had disappeared completely in 64% of cases and were reduced to 3% of their previous number in the remainder. In 1957, Kessel, in Tahiti, using a dosage of 2 mg/kg three times daily for seven days, found that, in 50% of the cases, a second course of treatment was necessary after a year, owing to the reappearance of microfilariae. When the dosage was increased to 6 mg/kg one day each month over a period of two years, only 2% of the cases were positive at the end of treatment, and all these were cured one year later. Diethylcarbamazine may thus be considered an effective drug. It acts by promoting phagocytosis of the filariae by the macrophages. The massive destruction of the filariae leads to secondary effects of an allergic nature, such as headache, articular pains and fever. These are partly relieved by acetylsalicylic acid or by antihistamines, but, nevertheless, constitute an obstacle to mass treatment. Kessel also used suramin (Antrypol) in Tahiti in a dose of 1 g administered by intravenous injection once weekly for seven weeks. It brought about a fall in the frequency of attacks of lymphangitis, but was more toxic than diethylcarbamazine.

Prevention

A programme of filariasis control, as carried out by Kessel in Tahiti and by Chow and Thevasagayam in Ceylon, would include the following measures:

1. Determination of the percentage of persons positive for microfilariae and of the

[4] Hewitt et al. (1947) *J. Amer. med. Ass.*, 135, 708

density of the microfilariae in the blood by examination of 20 mm³ of blood taken between 8 p.m. and midnight.

2. Identification of the vector and determination of its breeding habits, feeding habits and dispersal range; estimation of the mosquito density, i.e. the number of mosquitos captured on human bait, for example, 10 metres from houses in the course of 10 minutes; determination of the infection rate of the mosquitos by dissection of the various parts — head, trunk, thorax, abdomen — and counting the larvae present. In Tahiti, Kessel obtained the following values in 422 mosquitos :

Mosquitos carrying larvae	13.2%
Mosquitos carrying infective larvae	7.6%
Number of larvae per mosquito	0.74
Number of infective larvae per mosquito . .	0.19

All these determinations should be carried out annually.

3. Mosquito control by elimination of breeding places within a radius of 100 metres from habitations (treatment of holes in trees and rocks and of coconut-husk-pits, as well as weekly emptying of cesspools, drainage of stagnant ponds, etc.). In Tahiti this work is usually entrusted to householders and monthly inspections are made. Persons not complying with the regulations are liable to be fined. All this needs to be preceded by a propaganda campaign so as to ensure the collaboration of the public. This type of control is difficult. It takes five to ten years to eradicate the mosquitos in a given area. The number of mosquitos captured in houses is not greatly reduced by insecticide spraying of the rooms as the mosquitos do not rest indoors after feeding.

4. Larvicidal treatment of the usual mosquito breeding places. Both BHC in oily solution or in powder form and dieldrin in powder or granular form give excellent results. Provided that large doses are used, all the larvae are killed within two days. The use of large doses is necessary because of the presence of much organic matter which absorbs the insecticide.

5. Mass chemoprophylaxis and chemotherapy. Diethylcarbamazine is administered in a dose of 6 mg/kh once a month for a year to the entire population, including persons whose blood is free from microfilariae. Annual examinations should be carried out and in patients whose blood still contains microfilariae treatment should be continued. In Tahiti the filarial rate fell from 30% to 3% in three years; more than half the positive cases were found in immigrants or people who had refused treatment. Thus, chemotherapy alone was sufficient to eliminate filariasis almost entirely. The annual cost of the treatment per inhabitant was about US $3.

Individual treatment by mosquito netting in the home and the wearing of clothing out-of-doors should not be neglected.

Owing to the diversity of local conditions, the need for vector control alone, chemotherapy alone, or a combination of both will have to be decided on the results of the preliminary survey in each region.

Although so far an attempt to prevent the disease had been made in only a few areas, such as Ceylon and Tahiti, the results are sufficiently encouraging to justify the hope that in the near future similar measures will be undertaken in all countries in tropical and sub-tropical zones where the disease is endemic.

ONCHOCERCIASIS

(*Onchocerca volvulus* Leuckart)

Geographical distribution and incidence

Onchocerciasis is endemic in two areas:

In Africa, it occurs in Sierra Leone, Ghana, Nigeria, the Cameroons, French Equatorial Africa, the Sudan, the Belgian Congo, Kenya, Uganda and Tanganyika. The prevalence varies from 5% to 100%, and is most often between 30% and 50%.

In America, the disease is found in Guate-

mala and Mexico. In these countries it affects about one million inhabitants, most of them working in coffee plantations. In the infected area of Guatemala, which covers barely 2% of the country, 60% of the population suffered from the disease before the introduction of control measures. By 1943, however, the proportion had been reduced to 15%, with blindness in 1% of the cases. The disease has recently been observed in Venezuela.

Epidemiology

The adult male of *Onchocerca volvulus* is 3 cm long and the female 50 cm to 70 cm. The adults become encysted in subcutaneous nodules, where they may live for years. The embryos are liberated into the nodules, and migrate from there to all parts of the body, but are most frequently found in the skin and eyes. They are rarely encountered in the blood. After ingestion by the fly vector, they enter the digestive tube, which they soon leave for the thoracic muscles, where they develop into larvae. The latter then pass to the head and proboscis, from which they escape when the insect bites. The vector of *Onchocerca volvulus* is always one of the simuliid species: *S. damnosum* throughout Africa; *S. neavei* in the Belgian Congo, Kenya and Uganda; *S. ochraceum*, *S. metallicum* or *S. callidum* in Mexico and Guatemala. These flies inhabit humid and wooded areas near rapidly flowing, turbulent rivers. The larvae and pupae of *S. neavei* attach themselves to the crab *Potamonautes*. Those of other species attach themselves to sticks or stones.

In Africa, the proportion of flies infected varies from 3% to 15%, depending on the area. In Mexico, Mazzotti found that the proportion varied from 3% to 7% according to the species. In Guatemala, where Dalmat carried out very thorough entomological surveys, less than 1% of the flies are infected. Although an infective fly never carries more than three larvae, the risk of infection for man may be as high as one worm every three minutes in some areas.

Among the numerous studies of the life cycle of the simuliids may be mentioned those made by Wanson and his co-workers in the Belgian Congo between 1948 and 1951, and those made by de Meillon in East Africa.

The female of *S. damnosum* lays her eggs, numbering about 250, on the wet surfaces of stones or on the leaves or twigs of certain plants partly submerged in water. The eggs hatch shortly afterwards, and the larvae enter the water and attach themselves to rocks, leaves or twigs. The aquatic stage lasts about two weeks, after which the adults rise to the surface in a bubble of air. The females rest on vegetation, which they only leave in search of blood or, later, to lay their eggs. The main source of blood is man, but the fly may also attack various animals, including birds, goats, donkeys and dogs. It does not enter houses but bites in the open during the day, usually near water. It shows a preference for the lower extremities, except in Central America, where its special target is the uncovered head.

Symptomatology

The subcutaneous nodules, which are firm and movable under the skin, can be found in three-quarters of infected cases, and are probably present even more frequently, since the smallest and most deeply situated are easily missed. They do not appear earlier than eight months after arrival in an infected area. During the first few years, the nodules always contain living, encapsulated adult worms, eggs, microfilariae and, more rarely, caseous, greenish pus. After 10 to 15 years, they become softened and then contain only dead parasites. They are frequently found on the ribs, head, iliac crest, trochanter, knee, elbow, shoulder blades, in the armpit or behind the knee. The symptoms vary according to the geographical region. In Africa, the nodules occur principally on the body and limbs, while in America they are mainly on the head. Whereas in Africa a very irritating skin eruption frequently occurs on the buttocks, limbs and neck, with roughening and thickening of the skin, in America it

is more usual to find periodic erysipeloid lesions on the face and swelling of the ear.

Both in Africa and in America, between 10% and 50% of patients with onchocerciasis develop ocular lesions and 1% to 3% of these cases finally become blind. The lesions of the anterior part of the eye (keratitis and its complications) are probably caused by microfilariae in the tissues and media of the eye, particularly by dead filariae, which provoke an inflammatory reaction. It is probable that the frequency of these ocular manifestations is dependent upon the intensity of the infection; according to some observers, they are especially associated with nodules on the head.

It has been suggested that lesions leading to blindness might be due to an allergic response or to toxins released by the dead filariae as they disintegrate, and that the intoxication is more severe in cases of vitamin A deficiency. Experiments in guinea-pigs and rabbits, though still only at a preliminary stage, do not appear to indicate that the ocular lesions have an allergic origin—at least as far as these animals are concerned. In man, observations on the lesions of the posterior segment of the eye support the theory of a toxic rather than an allergic reaction. In any event, the cause of bilateral lesions, which almost invariably lead to blindness, is still unknown. The administration of vitamin A produced an improvement in vision in some patients. It is possible that the optic atrophy, which often accompanies the posterior lesions, is favoured by the dietary deficiencies which are so common in Africa.

Opacity of the cornea in an eye that is otherwise healthy is not necessarily related to onchocerciasis. In a group of African youths, for example, 41 were found to have corneal opacities, but none had onchocerciasis. However, 60% of those with corneal opacities had had an attack of malaria during the preceding month.

Although the lens may not be directly attacked, it is affected indirectly by the lesions of the neighbouring tissues. It becomes opaque and, as a result of degeneration of the suspensory ligaments, finally dislocates. The picture is, in fact, that of an onchocercal endophthalmitis, sometimes complicated by secondary infection.

Treatment

The nodules may be excised, and an improvement in vision is sometimes noted after removal of nodules from the head. Treatment with diethylcarbamazine or suramin brings about an improvement by destroying the microfilariae. The side-effects, which consist of febrile reactions, itching dermatitis, painful swelling of the nodules, arthritis, headache, nausea, etc., are attributed to an allergic reaction following the massive destruction of filariae. They may necessitate a temporary interruption of treatment and the administration of antihistamines. As in the case of bancroftian filariasis, a single course of diethylcarbamazine is not always sufficient to ensure the permanent disappearance of the microfilariae, and a second course may be needed after six or eight months. Great caution must be observed in the administration of suramin, owing to its high toxicity.

Prevention

Since the simuliids breed on plants and rocks in rapids and cascades, and their larvae live in the water, the only effective measure against the larvae is the addition of a larvicide to the watercourse upstream. It is also necessary to treat the other rivers in the area at the same time, in order to prevent the larvae migrating from one to another. The effective concentration of DDT is 0.5 parts per million of water, maintained continuously for 30 minutes every tenth day. Carried out over a period of three months, this treatment ensures the eradication not only of the larvae, which live only 14 days, but also of the adults, which live for two months. In order to estimate the amount of DDT required, it is necessary to measure the discharge of the rivers. Several methods are available for this purpose (weirs, acoustic or mechanical meters, floats). Spraying of DDT from the air on vegetation along the banks of watercourses has been used success-

fully to destroy the adult flies along the Congo rapids, where the volume of water that would need treating with DDT is enormous. However, this method is obviously expensive.

The destruction of simuliid larvae in watercourses is to be recommended, and should be undertaken as soon as possible in all cases where ocular complications of onchocerciasis are frequent.

THE SORPTION OF INSECTICIDES ON MUD WALLS

The development of insecticide resistance in anopheline vectors prompted the Eighth World Health Assembly in 1955 to pass a resolution sponsoring a programme " having as its ultimate objective the world-wide eradication of malaria ". The idea was that if malaria could be eradicated quickly, resistance would not have time to develop. Although results have, on the whole, been very satisfactory, it has been reported that residual insecticides sprayed on certain types of mud walls ceased to become available to the insect after a comparatively short time. This is explained by sorption of the insecticides, i.e. by their penetration into the material of which the walls are constructed. In certain areas it is considered that this phenomenon exerts an adverse effect on the success of the eradication programmes, so that a solution to the problem is a matter of urgency.

A co-ordinated programme of research to study sorption of insecticides on mud walls was initiated by WHO a few years back. To give impetus to these studies, a series of informal talks was arranged by WHO in Geneva in July 1957 between certain members of the Expert Advisory Panel on Insecticides [1] and the Secretariat of WHO.

The problem may be attacked in two ways: firstly by reducing the sorptive capacity of the soils used for constructing the walls, and secondly by developing new formulations of insecticides which are less liable to sorption. In studies planned by WHO which are being carried out in Zanzibar and the Sudan, the insecticide is being sprayed on walls constructed from soils, the activities of which have been determined beforehand. Observations will be made at intervals over a long period and the progressive reduction in biological activity examined. A similar study is in progress in Mexico under the auspices of the Pan American Sanitary Bureau, WHO Regional Office for the Americas.

Studies of this kind are at present hampered by the absence of a reliable method for estimating the amount of insecticide present at a surface, and by the fact that the exact relationship between concentration of insecticide on the surface of a sorptive mud and biological efficacy is not known.

The members of the group therefore considered that the work must proceed in two stages : (i) a pilot project planned and executed by highly-qualified and experienced staff to compare chemical deposits with biological efficiency; (ii) a routine malaria control programme in which the techniques developed in stage (i) are used as routine procedures.

In the sixth report of the WHO Expert Committee on Malaria, the hope was expressed that " the Expert Committee on Insecticides will examine and report on sampling of deposits on wall surfaces and on the estimation of insecticide in the sample ".[2] The difficulties involved in such an investigation were discussed by the group under four separate headings.

[1] Those taking part were: Dr M. E. Alessandrini of the Istituto Superiore di Sanità, Rome; Dr R. A. E. Galley, of the Colonial Pesticides Research Committee, London; Dr G. W. Pearce of the United States Public Health Service, Savannah, Ga.; and Dr J. Treboux of J. R. Geigy Ltd, Basle.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 123, 39

Determination of the activity of the soil used for making the huts

No simple method of determining the sorptive capacity of soils is at present available for field use. Several laboratory methods have been suggested, for example the carbon tetrachloride method of Barlow & Hadaway.[3] However, this is suitable only for highly active soils and is unreliable with less active muds. The only reliable method at present available is to apply a suspension of insecticide crystals to the soil and observe the rate of disappearance under controlled conditions of relative humidity and temperature. Here again, however, the results are not strictly comparable with those obtained under field conditions where wettable powders containing inert fillers are used rather than suspensions of pure crystals.

Determination of the amount of insecticide applied

A widely used method of sampling is the application to the soil surface, at different heights around the walls of the hut, of small strips of absorbent paper. After spraying, the strips are removed and their insecticide content determined. A disadvantage of the method is that the operator tends to pay particular attention to the paper strips when spraying. As a check, the foreman should note the total amount of insecticide sprayed in the hut and the area of the walls. In this way, a fair assessment of the average rate of application can be obtained. It must be remembered, however, that even the best spray teams are unable to produce a completely uniform deposit.

Other techniques which have been suggested, including the insertion of small squares of mud in specially prepared recesses in the walls, are too laborious to be of practical value.

Determination of the surface concentration of insecticide at intervals after spraying

Of a number of sampling techniques which have been described, two have been found perfectly satisfactory for following the movements of insecticides in the laboratory under controlled conditions and on smooth surfaces. Neither of them is suitable, however, for use as a routine method in the field, where all types of mud surface — rough, smooth, soft, hard, crumbly — may be encountered. The group felt that the effort needed to overcome this difficulty would be very great and might be out of all proportion to the value of the results obtained.

The two sampling techniques referred to above depend upon the use of Sellotape and of silicone-treated paper and were described by Barlow [4] and Alessandrini [5] respectively. The advantages and disadvantages of the two techniques are compared in Table I.

A third method is being developed in which carboxymethyl cellulose films are sprayed on the surface under examination; it is premature at present, however, to consider its possible application to the widely different surfaces encountered in the field.

The group considered that " the limitations of the techniques at present available have been insufficiently appreciated and the effort necessary to convert them to working field techniques underestimated ". In order that work can proceed without delay, they recommend that efforts should be concentrated on adapting the surfaces of the huts to existing techniques rather than on finding methods to fit " the rather heterogeneous miscellany of surfaces found in practice ". Such a procedure would be particularly suitable for the first-stage operation — the pilot project — in which more highly skilled workers are expected to be available to take samples and make observations. Its use in a routine malaria control programme would be possible only if the wall surfaces to be tested were prepared in advance and skilled supervision were continuously available.

The group felt strongly that a bioassay technique would offer advantages unlikely to be equalled by any chemical method now available or likely to be developed in the next

[3] Barlow, F. & Hadaway, A. B. (1955) *Bull. ent. Res.*, **46**, 547

[4] Unpublished working document WHO/Insecticides/22

[5] *R. C. Ist. sup. Sanità*, 1956, **19**, 1-6

TABLE I. COMPARISON BETWEEN THE SELLOTAPE AND SILICONED PAPER SAMPLING TECHNIQUES FOR FOLLOWING SORPTION OF INSECTICIDES IN THE LABORATORY

Sellotape	Siliconed paper
Commercial product, no preparation required.	Practice required to apply right amount of grease in standard manner.
Adheres to wall without being held; does not slip when rubbed.	Must be held on wall. Considerable skill needed to do this while rubbing without paper slipping.
On certain surfaces, recoveries of insecticide higher than with paper.	Recoveries generally lower than with tape, particularly when surface still humid immediately after spraying. Percentage recoveries increase after 24 hours.
Not suitable for soft, crumbly walls because much of surface layer also removed.	Can be used on much softer walls than tape because of lower adhesive power.
Recovery of insecticide varies with pressure applied to tape and hence with operator and number of samples taken.	Recovery of insecticide also varies with pressure applied; pressure must be maximum possible.
Interferes with more sensitive colorimetric methods of analysis. Stepanow method can be used but requires large sample involving a greater wall surface, particularly with dieldrin. If insecticide has been partially absorbed, 25 cm^2 are insufficient. Any errors of sampling are therefore magnified.	Does not interfere with colorimetric analysis; smaller samples (10-25 cm^2) can therefore be taken. The analysis is also more specific.
Transparent. Some idea can therefore be gained of the degree of contact and whether a minimum pressure has been applied.	Opaque. Impossible to assess degree of contact.
Flexible and follows fairly small irregularities of mud surfaces.	Relatively stiff. Low recoveries partly due to inability of paper to follow depressions which can still be reached by insects.
Difficult to handle because of tendency to roll up. Extraction of insecticide is therefore difficult and takes rather long.	Extraction of insecticide much easier and quicker than with tape and less solvent required.

few years and that, despite the difficulties, attempts to develop a suitable bioassay technique would be more likely to pay dividends than chemical investigations. They recommend that, as soon as a biological method capable of giving consistent results has been evolved, it should be given preference in the field, but should be supplemented by chemical estimation to provide comparative data.

Methods of analysis

It is unlikely that simple field techniques for the accurate analysis of samples will be developed in the near future. Although it is possible that some existing methods could be used in small field laboratories, the group recommends that, in general, chemical analyses should be carried out in reasonably well-equipped laboratories. Several widely used methods are available which have given consistent results when applied to a number of problems.[6]

There are three possible sources of error in the chemical analysis of samples from test surfaces: (i) experimental error in the analysis itself; (ii) uneven application of the

[6] The group prepared a table listing the pros and cons of the different methods, the principle of each method and the reference to its original description. A limited number of copies of this table are available on application to the Division of Environmental Sanitation, World Health Organization, Geneva.

insecticide to the surface; (iii) error of sampling.

The available evidence indicates that (i) is of secondary importance compared to (ii) and (iii). The group therefore felt that no advantage would be gained by taking several samples from the same area of wall and analysing them in different laboratories.

NEW EDITION OF THE INTERNATIONAL CLASSIFICATION OF DISEASES

The International Classification of Diseases (1955 revision) and the WHO Regulations concerning its use will come into force on 1 January 1958, in sufficient time for Member States to compile their mortality and morbidity statistics, in accordance with the new rules, before the censuses which are to take place in many countries in 1960 and 1961.

At the Ninth World Health Assembly, the report of the International Conference for the Seventh Decennial Revision of the International Lists of Diseases and Causes of Death was welcomed by the Director-General of WHO as "an important step forward in the process of improving and making more uniform, and therefore more valuable, statistics of morbidity and mortality."[1]

Before dealing with specific aspects of the new Classification, it is perhaps fitting to recall the work of WHO over the last 10 years in the field of health statistics, and to give a brief historical review of the subject.

Historical review

The comparability and consequently the efficacy of health statistics are closely linked with the solution of a related but much older problem, namely that of medical nomenclature. In the eighteenth century, a certain number of naturalists and physicians attempted to work out a uniform and methodical classification of disease in order to facilitate comparison of their findings and results. Their aim was to exchange diagnostic information of a qualitative nature, and this called for nomenclatures which would be as detailed and complete as possible; an example is the *Nosologia Methodica* of Sauvages.

During the nineteenth century the problem of nomenclature again arose, although in a very different form, when social medicine and health statistics applied quantitative methods to the sciences of life for the first time.

Instead of a complete and specific list giving a separate description of every known pathological condition, what was needed was a classification which would make it possible to enter all morbid conditions under a limited number of headings, and to supply quantitative information concerning groups of cases.

In 1853, the First International Statistical Congress took one of the earliest steps in the field of international medical co-operation when it attempted to establish a "Nomenclature uniforme des Causes de Décès" which would be generally recognized, but this and subsequent efforts had little result until the acceptance, in 1893, of the three classifications proposed by Bertillon.

Bertillon's classifications, based on the distinction between general diseases and those localized anatomically, and establishing the principle of selection of the underlying cause as cause of death, was adopted by several countries. It soon became apparent that advances in medicine and changes in medical terminology would necessitate the periodic revision of this classification. At the suggestion of the American Public Health Institute, a system of decennial revisions was adopted in 1899 by the International Statistical Institute. Accordingly,

[1] *Off. Rec. Wld Hlth Org.*, 1956, 71, 84-85

the French Government, which had been given the task of organizing these revisions, convoked at Paris, in August 1900, the first International Conference for the Revision of the International Classification of Causes of Death. Subsequent revisions took place in 1909, 1920, 1929, and 1938, the last two revisions being carried out with the collaboration of the Health Organization of the League of Nations. In 1938, the International Conference for the Fifth Revision of the Lists, wishing also to improve the international comparability of morbidity statistics, decided to extend the scope of its work so as to include non-fatal diseases and to draw up a list of these diseases on the same lines as the International List of Causes of Death. Various national lists of a similar nature were, in fact, already in use, but they were unsuitable both for purposes of statistical classification, and in particular, for those of tabulation.

In 1945, in accordance with a resolution of the International Conference for the Fifth Revision of the Lists, the United States Committee on Joint Causes of Death, whose members included representatives of the Canadian and British Governments, considered the establishment of such a list. Finding that the two types of nomenclature did not differ in structure, since they were both concerned with the same stage of the disease, namely the onset of the pathological process, the Committee decided to combine the two lists and prepared a draft entitled " Proposed Statistical Classification of Diseases, Injuries and Causes of Death " which was the first document to provide a common basis for the establishment of both types of statistics.

It was at this stage that the problem of the International Lists was referred to the World Health Organization. There were two reasons why WHO should undertake this work: firstly, because the Organization was obliged by its Constitution to promote the development of health statistics throughout the world, as well as the revision of the International Lists, and secondly, because WHO had been asked by the International Health Conference to undertake the preparatory work in connexion with the International Conference for the Sixth Revision of the Lists. For this purpose, the WHO Interim Commission set up an expert committee whose work, based on the draft classification of the United States Committee on Joint Causes of Death, had as its outcome the " International Statistical Classification of Diseases, Injuries and Causes of Death ". This Classification was circulated for examination to the national administrations of Member States preparing morbidity and mortality statistics, revised in accordance with their suggestions, and provided with a tabular list of the diseases appearing under each title.

The International Conference for the Sixth Revision, which met at Paris in 1948, adopted the Classification, approved the principle of entering the underlying cause as the principal cause of death, recommended the use of a standard form of medical certificate of cause of death, and requested the First World Health Assembly to issue, in accordance with its constitutional powers, regulations concerning the Classification and calculated to ensure its general use.

The Classification, together with rules for selection of the underlying cause of death for entry on the medical certificate, as well as special lists for the tabulation of statistics, and accompanied by the WHO Nomenclature Regulations No. 1, was published in two volumes, in 1950 and 1952, under the title of *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death.*

The *Manual* came into force on 1 January 1950.[2] Despite the imperfections inevitable in any new undertaking, this Classification marked a considerable advance in the field of the international comparability of health statistics, and there can be no doubt that it has been of great value in practice.

Activities prior to the Seventh Revision

After the appearance of the *Manual*, WHO took various steps to encourage its use in the establishment of national health statistics and

[2] *Off. Rec. Wld Hlth Org.*, 13, 349

to solve problems which might arise in the practical application of the new standards.

Certain sections of the Classification, particularly those concerning the causes of still birth, the categories for which had proved in practice to be too few or insufficiently specific, were re-examined by the Expert Committee on Health Statistics.

National committees on vital and health statistics, whose formation had been urged by the Conference for the Sixth Revision, were established in many countries. Anxious to encourage the activities of these new bodies and to promote their development, WHO has created a focal unit for liaison which supplies them with information and documents and ensures exchange of information between them. Furthermore, in collaboration with the United Nations, WHO convened in 1953 an International Conference of National Committees on Vital and Health Statistics.[3] Finally, in January 1951 a WHO Centre for Classification of Diseases was established at the General Register Office of England and Wales, with the aim of facilitating, by means of comments and advice the correct and uniform use of the medical certificate and the *Manual*, and of collecting all observations and data concerning them which might be of service at the next revision conference.

Seventh Revision of the Lists

The Conference for the Seventh Revision, which met at Paris in 1955, considered that the period of time elapsing since the entry into force of the *Manual* was too short to justify any radical change in the Classification. It therefore decided to restrict itself to such changes as were compatible with a limited revision.

Thanks to the observations of the WHO Centre for Classification of Diseases, the Conference was able to extend and simplify the rules for classification of the cause of death to be entered on the medical certificate. On the other hand, a re-drafting of the section on causes of still birth was considered to be premature, and the Conference recommended that study of this question be continued for a few more years. Only WHO Nomenclature Regulations No. 1 underwent any extensive change, experience having shown that the obligations imposed on Member States as regards the establishment and communication of their national statistics considerably exceeded their possibilities and sometimes their needs in this connexion. These obligations have been lightened and the rules relaxed, so as to allow Member States greater latitude in the choice of the type of statistics to be established and communicated.

The work of the Conference for the Seventh Revision was approved in 1956 by the Ninth World Health Assembly, which requested WHO to prepare a revised edition of the *Manual*; this was published in 1957.[4]

The new edition

The Classification includes a certain number of new categories for non-fatal diseases and injuries, which will help to make the tabulation of morbidity statistics easier.

However—and this point must be stressed—the list does not claim to be an exhaustive nomenclature of all known pathological conditions, and the choice of sections and categories complies with the needs of statistical classification—for which the importance and frequency of a disease are decisive—rather than with those of strict medical logic. In exceptional cases, where the diagnostic details recorded do not correspond to any of the categories in the Classification, it will be possible to enter them under a "residual" category, placed at the end of each section.

The major divisions of the Classification more or less correspond to those of the preceding Lists, i.e. the general diseases are grouped according to etiology, and the others according to anatomical site. The Detailed List, which constitutes the basic element of the Classification, includes nearly

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1954, 85

[4] World Health Organization (1957) *Manual of the international statistical classification of diseases, injuries and causes of death* (1955 revision), 2 vols., Geneva

a thousand categories, numbered according to a three-figure decimal system, which is explained in great detail. We shall do no more than mention here that with this system it is possible, thanks to gaps left in the sequence of numbers, to add new categories without changing the order of classification.

Only a limited number of categories can be used for the tabulation and publication of health statistics, so that it would be difficult to use the Detailed List. For this reason, the *Manual* includes three restricted lists whose use is recommended: an " Intermediate " List of 150 causes, an " Abbreviated " List of 50 causes, for the tabulation of mortality, and a " Special " List of 50 causes for the tabulation of morbidity for social security purposes.

For certain types of work, these restricted lists are more handy than the Detailed List; furthermore, they are simple to use and can be readily employed even in countries where medical personnel is still numerically inadequate. In some cases, depending on the nature of the statistics to be established, these lists may be extended by the addition of categories taken from the Detailed List. However, it is considered essential that causes be always coded according to the numbers of the Detailed List, whatever the list employed.

Some problems of classification

The Detailed List of categories is followed by a tabular list of 310 pages, indicating the precise diagnostic term or terms included under each category. As this table is intended for use all over the world by physicians of different ages and with different training, it has been judged advisable to include all diagnostic terms which are more or less in current use. Thus, certain of them are repetitions, others are obsolete and—in the light of recent discoveries—a few are even medically incorrect. However, as such terms frequently appear on medical certificates, the compilers have been obliged to include them so as not to detract from the value of the Classification.

Similarly, the structure—sometimes disputed—of certain sections is not entirely satisfactory. The section, " Mental, psychoneurotic and personality disorders ", in particular has met with some criticism. But the compilers cannot be held responsible for the apparently faulty arrangement of this section; it merely reflects the wide divergency of medical opinion in this field as regards classification and etiology. Again, the inclusion of a disease in a given group may appear advisable or inadvisable, depending on whether it is regarded from the angle of the clinician or that of the statistician. The viewpoint of the latter has sometimes prevailed. Thus, " Rheumatic fever " (Nos. 400-402) which, etiologically speaking, has nothing to do with the circulation, has been classified under " Diseases of the circulatory system " in view of the frequency of cardiovascular sequelae.

Finally, differences in terminology, both within one language and between different languages, have given rise to considerable difficulties. The same term may have two completely different meanings in the medical usage of the English- and French-speaking countries, and consequently will not occupy the same position in the list, thus complicating the work of the coders.

The establishment of this tabular list, the selection in each case of the most suitable generic term and its translation into the two other official languages — all this represents a considerable effort which it will be possible to improve still further in the light of the comments and suggestions of those using the *Manual*.

Rules for the use of the Manual

In this connexion, only minor changes have been embodied in the 1957 edition. As regards mortality statistics, the 1950-1952 *Manual* following the 1948 revision has proved its worth; the adoption of the International Medical Certificate and the rules for the selection of the underlying cause of death have greatly facilitated the compilation of these statistics and increased their international comparability. However, experience

showed that the rules concerning the use of the Certificate involved certain ambiguities which were very inconvenient in practice. Thanks to the work of the United States Committee on Joint Causes of Death, as well as the data and observations collected by the WHO Centre for Classification of Diseases, these rules have been re-cast, extended and simplified.

It has been found that the *Manual* is being more and more widely used for morbidity statistics. This is a cause for satisfaction; previously morbidity statistics were not comparable; the fact that comparison between them is now possible will doubtless lead to findings of the greatest medical interest. However, the *Manual*, which gives specific details on the establishment of mortality statistics, scarcely deals with the application of the Classification to morbidity statistics. This arises from the fact that disease has a bearing on the most varied aspects of social life (heredity, malnutrition, work capacity, etc.) and may be used as a basis for health statistical surveys of widely differing kinds. The application of the *Manual* will, therefore, vary according to the nature of the morbidity investigation contemplated and the purpose of the statistics. It is to be hoped that the experience gained in this field will soon make it possible to formulate general rules for the classification of data relating to morbidity.

Conclusion

In its present form, the Classification represents a considerable advance on that of 1948. Its users will probably already be more familiar with the very special problems of health statistics, a technique which is relatively new and capable of rendering services of the greatest value to health but which has perhaps not enjoyed all the publicity it deserves.

In health statistics, as the combination of two radically different sciences, some degree of compromise is inevitable, and the 1955 Classification—as its compilers admit—is no exception to this rule. Nevertheless, it must be hailed as the invaluable working tool that had been sought in vain for some sixty years. It is an achievement which, in the words of the Director General of WHO, will for long remain one of the "outstanding examples of the benefits which Member States can derive from international organizations, and which scarcely could have been obtained without them." [5]

[5] *Off. Rec. Wld Hlth Org.*, 1956, **71**, 84

Malaria

"This is a most interesting volume* dealing with changing strategy in malaria control. In fact, one may gain the impression that it advances beyond the long existing concept of malaria control and presents the new theory of malaria eradication, not omitting, however, the well-established methods of malaria control practice in order to effect malaria eradication. It stresses, however, the technical standpoint that nothing has come forward to change the now generally accepted opinion of malariologists that malaria eradication is the only national objective of an antimalaria campaign. It covers quite extensively the subjects of eradication, insecticide resistance, entomological investigations, epidemiology and prophylaxis."

Southern Medical Journal, 1957, **50**, 1395

* *Bull. Wld Hlth Org.*, 1956, **15**, 361-862

Reports of Expert Groups

THE PROBLEM OF JUVENILE EPILEPSY

One of WHO's first activities in the field of mental health was to help the Neuropsychiatric Clinic of the University of Vienna, Austria, to set up a juvenile epilepsy department. In the course of this work it came to light that epilepsy, despite its importance, is a disease still somewhat neglected by physicians, misunderstood by the public and almost completely ignored by statisticians. It became increasingly clear that a thorough study of the disease from the public health viewpoint was urgently called for.

To this end, a group of specialists in various disciplines from a number of European and American countries met in London, in October 1955, to study the physiological, psychiatric, genetic and, above all, social aspects of the problem of juvenile epilepsy. This study group was concerned with the disease during the first twenty years of life and considered as genuinely epileptic only the " clinical forms of attacks that are known by electro-encephalographic (EEG) and other investigations to be accompanied by the characteristic electrical activity of the brain recognized as epileptic ".

The report of the Study Group on Juvenile Epilepsy [1] is all the more welcome since the recent introduction of methods such as the pentetrazol (Cardiazol) test and the electro-encephalogram has led to great advances in the understanding of the disease, as well as in its treatment.

The transitory nature of the initial epileptic attacks and the hushing-up of more serious cases clearly make it difficult to obtain reliable statistics, and this explains the paucity of the statistical data at the Study Group's disposal. The figures available cover only a small number of cases and do not permit even an approximate evaluation of the incidence of epilepsy in Europe. They do, however, reveal the useful information that about 5% of infants have one or more fits before the age of three years, that in most cases such fits do not recur, and that continuing attacks are most likely to appear during puberty.

Knowledge of the pathogenesis of epilepsy is still inadequate. The work carried out by Hughlings Jackson at the end of the nineteenth century on lesions of the cerebral cortex and the focal localization of the epileptic discharge has made it possible to explain the mechanism of the motor disturbances which appear during certain seizures, but throws no light on the pathological processes involved in the disturbances of consciousness and behaviour encountered in other forms of epilepsy.

There are two types of epilepsy that are distinguishable according to the site of the epileptogenic zone: temporal lobe epilepsy and centrencephalic epilepsy. The course and treatment of these two forms of the disease are different. In more and more cases, electro-encephalographic examination shows that the disease originates from a cerebral lesion; but there is still no explanation why certain lesions are epileptogenic while others are not—a problem which biochemistry may soon be called upon to solve.

In the interests of clarity, the group decided to consider the complex question of the etiology of epilepsy under two main headings: acquired and hereditary factors. Here it may be mentioned in passing, that it is the acquired factors (cranio-cerebral traumatisms and certain infective agents) which are most likely to harm the intelligence of the

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 130, 44 pages. Price: 1/9, $0.30 or Sw. fr. 1. Published in English, French and Spanish.

patient, and that hereditary factors, while of some importance from the sociological viewpoint, can be regarded as involved only when there are seizures of the centrencephalic type, particularly shortly after birth.

The above factors provide only a rough working classification, however. Physicians are frequently faced with cases of unknown etiology, especially when the disease is accompanied by behaviour disorders. In these cases, environmental factors such as family atmosphere and social pressures may come into play and render diagnosis difficult. Furthermore, behaviour disorders—fairly common during childhood—may be unrelated to epilepsy, so that the physician must not leap to hasty conclusions and should be extremely cautious in making his pronouncements.

The technical diagnostic equipment required, the nature of the treatment, and the thorough knowledge of the home environment of the patient which is so essential, all make it preferable for epileptics to be cared for in specialized centres where there is close collaboration between epileptologists, paediatricians and social workers. Such centres exist in Great Britain and the Netherlands. The Study Group, while appreciating the special facilities of these two institutions,[2] points out that, by their very nature, they tend to work in an isolation prejudicial to case finding. To be completely effective, such centres should keep in close touch with family doctors, win their confidence and secure their co-operation, so that new cases can be referred to the centres before the patient's family has noticed the epileptic nature of the initial attacks.

After rapidly reviewing the posology and effects of the drugs (phenobarbital, hydantoins, trimethadone, etc.) that have now replaced the classical bromide treatment of the past, the report turns to the psychotherapeutic aspect of treatment.

It is essential for the physician to give the parents precise information concerning the nature of epilepsy. By describing it, not as a disease *sui generis* but as " a general symptom . . . that may be indicative of a number of underlying causes ", and divesting it of its mystery, he will help to create a home atmosphere favourable to cure. This is of prime importance. Attacks of *grand mal*, for example, particularly when preceded by an aura, are very alarming for the parents and may lead to a guilt complex or bring to light latent conflicts between them, for which the patient will always pay in the final analysis. Furthermore, the family should be kept carefully informed at all stages of the treatment, since some of the drugs prescribed may render the patient particularly irritable or apathetic. In general, every effort should be made to ensure that the patient lives as normal a life as possible. Under the surveillance of a school medical officer and a teacher aware of his condition, he can attend school with other children. When the time comes to choose an occupation, the youth employment officer should also be informed. In such cases, a relaxation of professional secrecy is justifiable and even desirable.

Finally, the report points out that although the incomplete knowledge of the etiology of epilepsy still makes prevention difficult, much can be done to improve diagnosis and treatment. Here, the psycho-sociological approach is all-important. Public opinion must be influenced and old prejudices overcome. Despite the old wives' tales which surround it, epilepsy is only a symptom and must be treated as such if it is to be effectively combated.

[2] Child Guidance Clinic, Maudsley Hospital, London; Epileptic Colony, Meer-an-Bosch, Heemstede

Notes and News

Regional Committee for the Americas

The Directing Council of the Pan American Sanitary Organization, which acts as WHO Regional Committee for the Americas, held its tenth session (ninth as Regional Committee) from 16 to 27 September 1957, in Washington, under the Chairmanship of Dr Alberto Bissot, Jr (Panama), with Dr Abraham Horwitz (Chile) and Dr Lucien Pierre-Nöel (Haiti) acting as Vice-Chairmen. Representatives of the 21 American republics and of France, the Netherlands and the United Kingdom were present, together with observers from Canada and the Organization of American States, and representatives of the United Nations, the specialized agencies and 16 non-governmental organizations.

After two weeks devoted to its detailed examination, the Council approved the programme of activities for 1958, covering about 160 health projects to be implemented by the public health administrations of the respective countries with the collaboration of the Pan American Sanitary Bureau (WHO Regional Office for the Americas). The PASO budget for the year's activities amounts to $3 000 000, which is an increase of $600 000 over the Organization's 1957 budget. The World Health Assembly has already approved a contribution by WHO of $1 558 000 for the financing of part of the programme, and it is also hoped to obtain about $1 275 000 from the United Nations Technical Assistance Programme.

The Council was also required to examine the proposed programme and budget for 1959, amounting to $4 000 000.

Malaria eradication is considered of paramount importance, and this is the first priority in the 1958 programme of work. The credit set aside for this activity will be supplemented by voluntary contributions by Member States to the PASO Special Malaria Eradication Fund. Up to the present time $2 300 000 have been contributed. According to plans worked out by the governments concerned, it should be possible to eradicate malaria definitely from most of the countries of the western hemisphere within five years, and from the whole continent not very long after.

The Council adopted 38 resolutions, one of which recommended the Director to continue his examination of the programme for the award of study fellowships to public health personnel, in order to see what can be done to improve this programme, which is one of the Office's principal means of strengthening national health administrations.

The Council also suggested that the Director should report to the Organization's executive organs on the situation with regard to the preparatory work for the issue of a manual giving minimum recommended sanitary standards in hotels, restaurants, public transport services, and tourist centres in the Americas.

A brief survey was made of the work of the Pan American Zoonoses Center established in 1956 at Azul, Argentina, for the purpose of promoting government campaigns against animal diseases which can be transmitted to man. The Council thanked the Argentine Government for its collaboration.

On the proposal of the Director of the PASB, the Office will be required to make a comprehensive study of the situation with regard to control of foodstuffs and drugs in the American countries, with a view to the possible creation of a centre which would be supported by participating governments and act for them as a clearing-house for scientific and technical information in these fields. The proposal aims at facilitating codification of food and drug laws and practices, as well as

the formulation of recommendations for their standardization. The plan also includes the organization of training courses, laboratory services for the analysis and testing of drugs, and consultative services to assist countries in the development and improvement of their food and drug services.

The Council examined in detail all the public health programmes in which PASB's collaboration has been requested. These programmes cover the whole range of public health activities and may be divided into four large groups as follows:

(1) eradication campaigns, i.e., in order of importance: eradication of malaria, eradication of *Aëdes aegypti*, the vector of yellow fever, eradication of yaws and eradication of smallpox;

(2) control of other communicable diseases, including tuberculosis, leprosy, poliomyelitis and influenza, by prevention or the latest, more effective treatments;

(3) strengthening of national health services, with emphasis on development of plans and more effective means of evaluating current programmes;

(4) new public health activities, including those concerned with chronic diseases, occupational health, control of foodstuffs and drugs, and the study of public health aspects of the peaceful uses of atomic energy.

In presenting his annual report, the Director of the Office stressed the necessity for long-range planning of the public health programmes which Member States of the Organization propose to implement, particularly with respect to those for the strengthening of national and local health services, expansion of professional training facilities and co-ordination of eradication programmes.

The Council approved another proposal by the Director for the transfer of the Zone Office for the Caribbean from Kingston, Jamaica, to Caracas, Venezuela. The new Zone Office will cover the Caribbean territories and the Republic of Venezuela.

As usual, some time was devoted to technical discussions, and this year they dealt with the improvement of methods for the evaluation of health programmes.

On 25 September, a special meeting of the Directing Council was held to commemorate the tenth anniversary of the Constitution of the Pan American Sanitary Organization.

Every four years the Directing Council session is replaced by a meeting of the Pan American Sanitary Conference and this will hold its fifteenth session from 21 September to 6 October 1958 at San Juan, Puerto Rico; it will also constitute the tenth meeting of the WHO Regional Committee for the Americas.

Committee on International Quarantine

By direction of the World Health Assembly, the Director-General of WHO annually convenes a Committee on International Quarantine to review the functioning of the International Sanitary Regulations and consider other aspects of international traffic relating to quarantine.

At its 1957 meeting, which took place in Geneva from 21 to 25 October, the Committee noted that the International Sanitary Regulations have now become practically a universal code of quarantine practice, binding some 170 States and territories and applied to a large extent by the few remaining States.

Other matters considered by the Committee included the 1957 influenza pandemic, the importation of smallpox by international travellers into 18 countries, in 8 of which epidemics broke out as a result, and the danger of introducing malaria subjects or insecticide-resistant malaria vectors into countries which are free of them.

The Committee discussed the possibility of travellers reintroducing malaria into countries that had eradicated the disease, but decided that it was too early to amend the International Sanitary Regulations and officially to declare malaria a quarantinable disease. It suggested that no special antimalaria measures should be imposed on international travellers, but that antimalaria treatment could be given to migrants, seasonal workers, or pilgrims, as a safeguard against the reintroduction of the disease.

The following were members of the Committee: Dr B. M. Clark (Union of South Africa), Professor A. Halawani (Egypt), Dr C. K. Lakshmanan (India), Dr L. H. Murray (United Kingdom), Professor E. G. Nauck (Germany), Dr Stevo Pošlonček (Yugoslavia), Dr C. B. Spencer (United States of America), and Dr O. Vargas-Méndez (Costa Rica). Dr F. de Tavel, Medical Adviser, ICAO, attended the meeting as an observer.

Seminar on veterinary public health

In view of the growing number of diseases known to be transmissible from animals to man (zoonoses), and the need for hygienic control of foods of animal origin, it is essential that there should be close co-operation between veterinarians and the public health services. A seminar on veterinary public health was therefore convened in Warsaw, from 25 November to 5 December, by the WHO Regional Office for Europe, with the participation of FAO. Its purpose was to promote the establishment of veterinary public health services and to strengthen existing services of this type in the countries of the European Region.

The seminar was divided into two parts, the first week being devoted to discussions on general matters relating to veterinary public health, including: the interrelationship of human and animal health and disease; the control of food and other products of animal origin; reporting of the zoonoses; the organization and administration of veterinary public health services; the training of undergraduate and post-graduate veterinary personnel; and co-operation between medical, veterinary, sanitary and allied disciplines. The second week was taken up with discussions and demonstrations on six important zoonoses, namely, tick-borne encephalitis, rabies, leptospirosis, toxoplasmosis, dermatophytosis and brucellosis.

The experts who acted as discussion leaders at the seminar included: Dr B. Babudieri (Italy), Dr D. Blaskovic (Czechoslovakia), Dr W. C. Cockburn (United Kingdom), Dr E. Holager (Norway), Dr A. Jepsen (Denmark), Dr M. Kaplan (WHO), Dr E. N. Pavlovsky (USSR), Dr C. La Touche (United Kingdom), Dr J. Siim (Denmark), Dr J. H. Steele (USA), Dr D. Studic (Yugoslavia), and Dr R. Vuillaume (France).

The Warsaw seminar was the third of its kind to be convened by the WHO Regional Office for Europe, with the co-operation of FAO. The first was the WHO/FAO seminar on zoonoses, held in Vienna in November 1952, at which medical and veterinary officials from 22 different countries discussed bovine tuberculosis, leptospirosis, Q fever and rabies. This seminar led to the publication of the monograph *Advances in the Control of Zoonoses* issued jointly in 1954 by WHO and FAO. The second was the WHO/FAO seminar on meat hygiene, held in Copenhagen in February 1954, and led to the publication of the monograph *Meat Hygiene* in 1957.

Rural health in South-East Asia

Rural health services in the countries of South-East Asia should be expanded and governments should give them more financial support. Environmental sanitation, the lack of which is a problem common to these countries, should receive special attention in all rural health programmes in the Region.

These were among the conclusions reached by a WHO-sponsored Rural Health Conference, held in New Delhi from 14 to 26 October, during which delegations from Afghanistan, Burma, Ceylon, India, Indonesia, Nepal and Thailand reviewed various rural health problems with the aim of finding solutions which would be applicable to some extent in all their countries.

The Conference recommended that rural health units should each serve a population of between 20 000 and 30 000 persons, and that they should deal with the major health problems of the areas in which they are situated, including medical care. The minimum staff for a rural health unit should consist of: 1 medical officer, 1 public health nurse or health visitor, 1 sanitary officer, 1 midwife for every 5000 persons in the area,

and 1 sanitary assistant for every 10 000 to 15 000 persons. One staff member of each unit should be a specialist in health education.

Special training in public health and preventive medicine was recommended for all categories of professional workers entering the rural health services. These workers should also receive more adequate information and guidance on questions of nutrition, since malnutrition is an important source of ill-health throughout the Region.

Better provision for in-patient medical care at rural health centres and hospitals was also advocated by the Conference, and the need for the collection and exchange of information on rural health problems and developments was strongly emphasized. Finally, it was suggested that national seminars on rural health should be held periodically, with WHO assistance, and that further Rural Health Conferences should be held in the various countries of the Region in turn.

Teaching of preventive and social medicine

A WHO-sponsored study group on the teaching of preventive and social medicine in the countries of the Western Pacific Region was held in Manila from 16 to 29 October. Professors of preventive medicine and deans of medical schools from the following countries and territories were invited to take part: Australia, Cambodia, China, Fiji, Hong Kong, Japan, Korea, New Zealand, Philippines, Singapore and Viet Nam.

The study group discussed various questions relating to the organization of a Department of Preventive and Social Medicine at a medical school, including curriculum, teaching methods, relations with other departments of the school, role in community health activities and comprehensive health care, and research work.

Seminar on maternal and child health

The health of mothers and children in the Eastern Mediterranean Region continues to be a major concern of health administrators, for, although accurate vital statistics are not available in every case, it is obvious that both infant and maternal morbidity and mortality rates are high for most of the countries in the Region.

At a WHO-sponsored seminar on maternal and child health, held in Cairo from 25 November to 7 December, 42 health workers from 12 countries in the Eastern Mediterranean Region, and 3 from neighbouring countries in the European Region, met to discuss major problems of maternal and child health. A number of international specialists in various aspects of maternal and child health were available for consultations and to lead the discussions, which were centred around the theme "Priorities in the planning and development of maternal and child health services".

The topics discussed under this general heading included: methods of assessing the needs of mothers and children, and of evaluating maternal and child health services; the administration of these services; the health education of the family (with practical demonstrations on the use of visual aids in health education); the integration of maternal and child health services in the general health services; and staffing and training.

Public Health Conference and study tour

A Public Health Conference combined with a study tour of Japan and Taiwan was held by the WHO Regional Office for the Western Pacific from 13 to 30 September, immediately following the eighth session of the Regional Committee for the Western Pacific, in Hong Kong. The participants included senior health officers from various Member States and territories in the Region, representatives of the Regional Office and a representative of the United States International Co-operation Administration mission in Taipei.

The group assembled in Hong Kong, prior to leaving for Japan and Taiwan, where they visited research laboratories, medical schools, institutes of public health, nursing education projects, vital and health statistical services, environmental sanitation schemes, hospitals and health centres, maternal and child health services, crippled children's services, and

programmes for the control of communicable diseases, such as malaria, tuberculosis, leprosy, venereal diseases and trachoma. The subject of the Public Health Conference, of which seven sessions were held, was " Comprehensive health planning ".

Nutrition training course in Uganda

Malnutrition and varying degrees of subnutrition represent an important health problem in African countries south of the Sahara, and there is an urgent need for trained personnel to deal with the situation.

A nutrition training course for doctors, veterinarians, agronomists, educators and administrators from the English-speaking countries in the African Region was held in Kampala, Uganda, from 21 October to 23 November. Two similar courses had previously been given at Marseilles for health workers from the French-speaking countries of Africa.

The course was organized by the Government of Uganda with joint assistance from WHO and FAO. It included lectures, demonstrations, field excursions, and discussions covering such aspects of nutrition as: the assessment of the state of nutrition of individuals in communities and countries; the production, processing, storage and transport of food; and the adoption of new techniques, with special reference to problems arising from changing economic and social values.

A one-week seminar followed, during which the practical application of the measures and techniques taught at the training course was discussed from the administrative point of view.

World medical periodicals

By agreement with WHO and UNESCO, which were jointly responsible for the publication of the first edition of *World Medical Periodicals* in 1953, a second edition of this list of medical and biological periodicals, accompanied by their abbreviated titles, has just been published by the World Medical Association.[1]

Changes in the new edition include the addition of some 1400 titles and the omission of 600, the addition of publishers' names and addresses, and the grouping of entries in the subject index by countries. Particulars are given of about 4250 journals of medicine, pharmacy, dentistry, and veterinary medicine in existence at the beginning of 1957, and well known journals which have ceased publication since 1900, but to which frequent reference is made in current bibliographies. The preface, headings and explanatory text appear in English, French, Spanish, and German.

Each entry gives the title of the periodical; the name and address of the publisher; the language of the periodical, where this is not apparent; frequency of publication; and the title abbreviated according to the rules of the *World List of Scientific Periodicals* as modified by the International Code for the Abbreviation of Titles of Periodicals, 1954 (International Standards Organization, R.4). Changes of title and incorporation with other journals are indicated. Titles are given in the original form; translations have been added to Japanese titles and transliterations to Cyrillic and Greek titles.

Two new appendices give (1) a list of the principal international abstracting journals, and (2) a list of the principal international periodical indexes. An additional feature is the inclusion of the International Code for the Abbreviation of Titles of Periodicals, 1954.

[1] World Medical Association (1957) *World medical periodicals*, New York, 340 + xxxiii pages. Price: 30/-, or $6.00 net; interleaved copies 40/-, or $8.00 net.

People and Places

Malaria field appointments

The eradication of malaria continues to be one of WHO's most pressing aims, and several appointments to WHO-assisted malaria eradication or control programmes were recently announced.

Professor George Macdonald, Director of the Ross Institute of Tropical Hygiene, London, has been appointed consultant to the WHO advisory team for malaria eradication now working in the

Philippines. Professor Macdonald has reviewed the findings of the advisory team and will assist in the preparation of its final report and recommendations.

Dr H. G. S. Morin has just completed a WHO assignment in Israel, where he examined the progress of malaria control and helped in studies for the ultimate eradication of the disease. Dr Morin had previously served WHO as a regional malaria adviser in both the South-East Asia and Eastern Mediterranean Regions.

The Government of Egypt, which has been carrying out a nation-wide malaria control programme affecting more than 4 million people, has now decided to aim at the eradication of the disease. WHO has sent Professor Augusto Corradetti, of the Istituto Superiore di Sanità, Rome, to Egypt to assist the Ministry of Health in the preliminary planning of the eradication programme. During the past two years, Professor Corradetti has paid several visits to Turkey, on behalf of WHO, to help develop a similar programme in that country.

Dr R. C. Muirhead-Thomson has been appointed entomologist to a WHO team investigating the progress of malaria control in Southern Rhodesia. Dr Muirhead-Thomson has worked on the entomology of malaria and other tropical diseases in various parts of the world, including Assam, West Africa and the West Indies.

The Government of Uganda is anxious to control malaria in the Kigezi resettlement district, and Dr H. de Rook has been assigned by WHO to carry out a preliminary survey in this area. Dr de Rook has worked on malaria in West New Guinea for many years.

After two years' work with the WHO malaria project in North Borneo, Dr W. J. Stoker is now the leader of a team in Zanzibar. Prior to his service with WHO, Dr Stoker was engaged for 25 years in malaria work in Indonesia. Assisting Dr Stoker as entomologist on the Zanzibar team is Dr Ravi Iyengar, who has carried out post-graduate work at the Harvard School of Public Health.

The antimalaria campaign in which Dr Stoker and Dr Iyengar are engaged is of particular interest. It covers the islands of Zanzibar and Pemba, and it is hoped that it will throw new light on possibilities of malaria eradication under tropical African conditions.

Cancer survey in Lebanon

The Lebanese Government has asked WHO to undertake a preliminary survey of cancer morbidity and mortality in Lebanon, and to advise it on a cancer control plan with particular reference to diagnosis and treatment.

Dr P. F. Denoix, of France, will take up this assignment in November. Dr Denoix is the Assistant Secretary General of the International Union against Cancer and Director of the Gustave Roussy Cancer Institute, Villejuif, France. A member of the WHO Expert Advisory Panel on Health Statistics, Dr Denoix has also served on the WHO Sub-Committee on Registration of Cases of Cancer.

New psychiatric hospital for Karachi

Dr J. B. S. Lewis, of the United Kingdom, has been sent to Pakistan by WHO to advise on the design and administration of a new psychiatric hospital to be built in Karachi.

Dr Lewis has administrative experience of psychiatric hospitals of all types, and, as Consultant Physician to the British National Health Service, has given lectures on administration and law in psychiatry.

Research on tuberculosis chemotherapy

Research on the effect of chemotherapy on tuberculosis patients in hospitals, and at home, is being conducted in Madras, India, under the auspices of WHO, in co-operation with the Medical Research Council of Great Britain and the Indian Government. This project is particularly important since its conclusions may be embodied in future technical recommendations by WHO for national tuberculosis programmes.

Dr Ian Sutherland, of the United Kingdom, went to New Delhi in October to advise on this project. A graduate of Cambridge University, Dr Sutherland is a member of the Statistical Research Unit of the Medical Research Council of Great Britain.

Reorganization of school health services in Egypt

The rapid expansion of Egypt's educational system has necessitated a reorganization of the country's school health services with a view to their integration into the public health services.

Dr E. A. Johanning, Deputy Director of the Division of Health and Epidemiology of the Health Services of Norway, has been sent by WHO to advise the Egyptian Ministry of Education on this matter for a period of three months starting 1 November.

New Public Health Adviser for Eastern Mediterranean Region

Dr Alfred C. Eberwein has been appointed Public Health Adviser and acting Education and Training

Officer at the WHO Regional Office for the Eastern Mediterranean. Formerly Public Health Adviser in the WHO Regional Office for Europe, Dr Eberwein has also served as Medical Officer at the Federal Department of Public Health in Bonn.

New appointments at Regional Office for Europe

Dr L. Lataillade has been appointed Public Health Administrator at the WHO Regional Office for Europe, with the task of co-ordinating all Technical Assistance programmes undertaken in the Region. After graduating from the Medical Faculty of Algiers, Dr Lataillade carried out further studies at the Harvard School of Public Health and was, from 1950 to 1957, Director of the Public Health Centre at Soissons, France.

Dr D. O. Hasenbring took up his duties as Regional Officer for Social Health and Medical Care at the Regional Office for Europe, in November. A graduate of the University of Bonn, he has had wide experience of public health administration both in Germany and the United States of America.

Malaria consultant for Gambia

Sir Gordon Covell, of the United Kingdom, is visiting Gambia, West Africa, on behalf of WHO, to advise on future antimalaria work in the territory.

An Adviser on Malaria to the Ministry of Health (England and Wales) and a former Director of the Malaria Institute of India, Sir Gordon Covell has attended the meetings of all WHO Expert Committees on Malaria convened since 1948, and has served WHO as a consultant on several occasions.

Consultant on hospital physics for India

In India, as elsewhere, there is considerable interest in the problem of radiation protection during diagnostic and therapeutic applications of X-rays and radium therapy. In the past it was thought that there was a threshold below which radiation produced no effect on the body; in recent years, however, there has been increasing evidence that, in the case of certain radiation effects—for instance, the production of gene mutations—there is no threshold below which harmful consequences are completely absent. Many countries are therefore seeking ways of eliminating exposure to radiation in excess of that necessary for the success of any particular diagnostic or therapeutic procedure.

Mr R. F. Farr, of the United Kingdom, is touring India, under WHO auspices, from 20 November to 31 December, to give lectures at various radiological centres on the British approach to this problem, and to advise on hospital physics in general. Mr Farr is deputy chief hospital physicist at the Christie Hospital and Holt Radium Institute, Manchester, and a Committee Member of the Hospital Physicists Association of Great Britain.

Occupational health survey in Lebanon

Dr Arne Bruusgaard, Chief of Factory Inspection in the Ministry of Labour, Oslo, has been asked by WHO to assist in a survey of occupational health needs and resources now being carried out in Lebanon.

Dr Bruusgaard acted as WHO consultant for a similar survey in Egypt in 1952, one result of which was the recent establishment of an Institute of Occupational Health in Alexandria.

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